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State of California
Department of Natural Resources
Division of Forestry

Los Angeles County Fire Department

FUEL-BREAK REPORT NO. 6

U. S. Department of Agriculture
Pacific Southwest Forest and Range
Experiment Station
Forest Service, Region 5

HIGHLIGHTS FROM BROADCAST SPRAYING OF
CHAMISE SPROUTS IN SOUTHERN CALIFORNIA

Three years' experience in spraying regrowth of chamise-sage brush types has shown that broadcast chemical spraying by either tractor boom or helicopter is effective. On some of the FUEL-BREAK demonstration and action projects, a single application of hormone type chemicals has killed almost all of the brush sprouts and seedlings, so that the remaining plants could be easily killed by hand spraying. On other projects a second broadcast application was needed to reduce the number of sprouting plants to the point where they could be controlled by hand spraying. This degree of control from two broadcast applications is generally considered satisfactory. But we still hope to learn how to kill almost all chamise sprouts with one broadcast spraying.

The results from work to date, for the areas which have been sampled, are shown on page 2.

For those areas which required a second broadcast spraying, the first application killed about 50 to 60 percent of the sprouting chamise plants and all of the brush seedlings. Casual observation indicated effective control. Yet, we rated control from the single application as poor because too many living sprouts remained for efficient hand spray follow-up. We required 95 to 99 percent kill for a good rating of a single broadcast spraying, and over 99 percent kill for an excellent rating.

We have been recommending a lower application rate for tractor boom spraying than for helicopter spraying. The rate for tractor work is 4 pounds, acid equivalent, in 20 gallons of water-oil emulsion per acre. For helicopter spraying the rate is 6 pounds in 20 gallons, applied in 2 passes of 10 gallons each. The higher rate is to compensate for probable loss through drift, and to get as high a degree of control as possible for this expensive operation. The double flying aims at improving distribution of spray material on the steep terrain where we typically use aerial application.

Results from helicopter spraying at recommended rates this year appear to be comparable to those from tractor application. Use of flagmen on steep terrain has helped reduce the amount of "missed" area on aerial spray jobs.

FUEL-BREAK BROADCAST SPRAY PROJECTS 1958 - 1960

CHAMISE-SAGE TYPES

: Method :	:	:	:	:	Date	:	:
: of :	:	Project Name	:	Age of :	of	Degree of	:
Year: Application :	:	and Acreage	:	Sprouts:	Application :	Control :	Follow-up Needed
(Years)							
1958	Tractor	Four Corners	40	2	May	Excellent	Minor hand spraying
		Chocolate	10	1	May	Poor	Broadcast respray
		Oak Grove	60	2	May	Excellent	Minor hand spraying
	Helicopter	Four Corners	10	2	May	Excellent	Minor hand spraying
		Chocolate	10	1	May	Poor	Broadcast respray
1959	Tractor	Oak Grove	153	1	May	Fair	Hand spraying
		Tenaja	88	1	May	Poor	Broadcast respray
		Summit	33	1	June	Good	Minor hand spraying
		Wilcox	30	2	May	Poor	Broadcast respray
		Topanga	15	1	May	Poor	Broadcast respray
	Helicopter	Topanga	11	1	June	Poor	Broadcast respray
		International	72	2-3	June	Poor	" "
1960	Tractor	Black Canyon	30	1	June	Not sampled	Not determined
		Summit	50	1	June	" "	" "
		Tenaja (respray)	30	2	May-June	" "	" "
	Helicopter	Edison	60	1	June	" "	" "
		Sitton Peak	30	2	May	" "	" "
		Topanga (respray)	25	2	May	" "	" "
		Wilcox	133	2	May	" "	" "
		Chocolate (respray)	20	3	June	" "	" "

Excellent: 99% + Kill

Fair: 85 to 95% Kill

Good: 95 to 99% Kill

Poor: Less than 85%

The cost of helicopter spraying has averaged about \$18.50 per acre, as compared to \$13.00 for tractor boom spraying. One of our main research jobs is to test alternate methods of aerial application in an attempt to reduce costs while maintaining effective control. Some of these alternatives are: The use of lower volumes per acre, single flying instead of two passes, other kinds of emulsions, and, perhaps, lower chemical rates per acre.

We need to know more about how yearly weather variations affect results from broadcast spraying by either tractor or helicopter. So far, the best results were obtained in 1958 when plant growing conditions were extremely favorable. The poorest results were obtained in 1959, a dry season when growth of sprouts was greatly delayed and was never vigorous. The results from 1960, which we have observed but haven't yet sampled, appear to be intermediate. Total precipitation in 1960 was about the same as in 1959 but was better distributed; sprout growth was vigorous but stopped abruptly when soil moisture was depleted.

Spraying late in the growing season has given best control of first-year chamise sprouts. This seems to be especially true during dry years, which in the past have been considered as years for early spraying. At Oak Flats this year the chamise plants which were sprayed early in May have resprouted profusely. The plants sprayed at the end of May have many new sprouts. But those sprayed near the end of June have not resprouted to any extent, and most of them appear to be dead.

As could be expected, the broadcast spraying in southern California has pointed up more specific research problems than it has solved. Yet, the overall results have been satisfactory, and this effective control method will be used more and more for killing regrowth of chamise-sage brush types.

The results of work to date in spraying chamise sprouts will be analyzed after sampling has been completed, and Tim Plumb of the FUEL-BREAK staff will report them in more detail as a technical paper.

September 30, 1960